

VERSION OF AMENDMENTS TO SHOW CHANGES MADE

In accordance with the requirements of 37CFR § 1.111, a marked up version of the amended specifications and claims is presented here.

IN THE CLAIMS

1 12. (amended) The logging apparatus of claim 4 wherein said quadrupole transmitter
2 further comprises [2N] N pairs of diametrically opposed transmitter elements
3 disposed circumferentially around said collar, where N is an integer greater than
4 or equal to 2.

1 13. (amended) The logging apparatus of claim 12 wherein N is equal to two [one].

1 26. (amended) The logging apparatus of claim 23 wherein said quadrupole transmitter
2 further comprises at least N[2N] pairs of diametrically opposed transmitter
3 elements disposed circumferentially around said collar, where N is an integer
4 greater than or equal to 2

1 31. (amended) A shear wave logging apparatus comprising:
2 (a) a drilling collar conveyed on a drilling tubular in a borehole within a
3 formation, said drilling collar having a cutoff frequency for a collar mode

4 wave therein;

5 (b) a quadrupole transmitter on the collar producing a signal at a frequency
6 below said cutoff frequency, said signal comprising primarily of a
7 formation mode having an azimuthal variation substantially having a
8 $\cos 2\theta$ [θ] variation, wherein θ is an azimuthal angle;

9 (c) at least one detector spaced axially apart from the quadrupole transmitter
10 for detecting said signal; and

11 (d) a processor for processing the detected signal and determining therefrom a
12 shear velocity of the formation;

1 44. (amended) A method of using an acoustic logging apparatus on drilling collar
2 conveyed on a drilling tubular in a borehole within a formation, the method
3 comprising :
4 (a) using a transmitter on the logging apparatus for producing a quadrupole
5 signal comprising a formation mode and a tool mode;
6 (b) using at least one signal detector on the drilling collar spaced apart axially
7 from the transmitter for detecting said signal; and
8 [(d)][(c)] using a processor for low-pass filtering a component of the
9 detected signal having a frequency below a cutoff frequency of the tool
10 mode in the drill collar;

- 1 53. (amended) A method of determining a parameter of interest of an earth formation
2 using a shear wave logging apparatus on a drilling collar, the method comprising :
3 (a) using a quadrupole transmitter on the collar for producing a signal, said
4 signal comprising a formation mode and a tool mode;
5 ~~[(c)]~~(b) using at least one detector spaced axially apart from the quadrupole
6 transmitter for detecting said signal;
7 ~~[(d)]~~(c) using a processor for processing the detected signal using a filter
8 for attenuating components of the signal above said cutoff frequency and
9 determining therefrom a shear velocity of the formation.

Consideration of the application as amended is respectfully requested. The
Commissioner is hereby authorized to charge any fee due for these amendments to
Deposit Account No. 02--0429 (414-23747)

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Respectfully submitted,



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18